

# Pure Monopoly

This chapter looks at the other end of the spectrum and examines pure monopoly, a market structure in which there is a **single seller**. Like pure competition, pure monopoly is rarely found in the U.S. economy, but it is still important. Many government-owned or government-regulated public utilities (electricity, water, natural gas, or cable television) are close to being pure monopolies, and other business firms are near monopolies because they have a large share of a market. Monopolies play a key role in the allocation of resources and the production of goods and services in the economy.

It is possible for a single seller or pure monopolist to dominate an industry if firms are prevented in some way from entering the industry. Factors that restrict firms from entering an industry are referred to as **barriers to entry**. The second section of this chapter is devoted to a description of the more important types of these barriers, such as economies of scale, patents and licenses, control of essential resources, and strategies for product pricing.

The chapter answers certain questions about the pure monopolist, such as what output will the firm produce, what price it will charge, and the amount of profit for the firm. In answering these questions and in comparing pure competition and pure monopoly, note the following:

1. Both the competitive and monopoly firm try to maximize profits by producing the output at which marginal cost and marginal revenue are equal ( $MR = MC$ ).
2. The individual firm in a perfectly competitive industry sees a perfectly price elastic demand for its product at the going market price because it is but one of many firms in the industry, but the monopolist sees a market demand schedule that is less than perfectly price elastic because **the monopolist is the industry**. The purely competitive firm has *only* an output policy and is a price taker, but the monopolist is able to determine the price at which it will sell its product and is a price maker.
3. When demand is perfectly price elastic, price is equal to marginal revenue and is constant, but when demand is less than perfectly price elastic, marginal revenue is less than price and both decrease as the output of the firm increases.
4. Because entry is blocked in the long run, firms cannot enter a monopolistic industry to compete away profits as they can under conditions of pure competition.

This chapter has three other goals that deserve your study time and careful attention. One goal is to evaluate **economic efficiency** under pure monopoly. Here the purely competitive industry that you read about in Chapter 9 serves as the standard for comparison. You will learn that unlike the purely competitive industry, pure monopoly does not result in allocative efficiency. Although the inefficiencies of monopoly are offset or reduced by economies of scale and technological progress, they are reinforced by the presence of X-inefficiency and rent-seeking behavior.

The second goal is to discuss the possible pricing strategies of the pure monopolist. The monopolist may be able to set multiple prices for the same product even when the price differences are not justified by cost differences, a situation called **price discrimination**. This type of pricing power works only under certain conditions, and when it is effective it results in higher profits for the monopolist and also greater output.

The pricing power and inefficiency of the pure monopoly have made it a target for **regulation**. Therefore, the last section of the chapter explains the economic choices a regulatory agency faces when it must determine the maximum price that a public utility will be allowed to charge for its product. Here you will learn about the **socially optimum price** and the **fair-return price** and their effects on efficiency and profits. You will also discover the difficult economic dilemma regulatory officials face as they decide what prices they should permit a monopolist to charge.

## ■ CHECKLIST

When you have studied this chapter you should be able to

- ☐ Define pure monopoly based on five characteristics.
- ☐ Give several examples of monopoly and explain its importance.
- ☐ List and explain four potential barriers that would prevent or deter the entry of new firms into an industry.
- ☐ Define a natural monopoly using an average total-cost curve.
- ☐ Compare the demand curve for the pure monopolist with that of the purely competitive firm.
- ☐ Compute marginal revenue when you are given the demand for the monopolist's product.
- ☐ Explain the relationship between the price a monopolist charges and the marginal revenue from the sale of an additional unit of the product.

- ☐ Explain why the monopolist is a price maker.
- ☐ Use elasticity to explain the region of the demand curve where the monopolist produces.
- ☐ State the rule that explains what output the monopolist will produce and the price that will be charged.
- ☐ Determine the profit-maximizing output and price for the pure monopolist when you are given the demand and cost data.
- ☐ Explain why there is no supply curve for the pure monopolist.
- ☐ Counter two popular misconceptions about the price charged and the profit target in pure monopoly.
- ☐ Explain why monopolists can experience losses.
- ☐ Compare the economic effects of pure monopoly in terms of price, output, efficiency, and income distribution with a purely competitive industry producing the same product.
- ☐ Discuss the cost complications caused by economies of scale, X-inefficiency, rent-seeking behavior, and technological advance for pure monopoly and a purely competitive industry.
- ☐ Describe three general policy options for dealing with the economic inefficiency of monopoly.
- ☐ Define and give examples of price discrimination.
- ☐ List three conditions that are necessary for price discrimination.
- ☐ Explain the economic consequences of price discrimination.
- ☐ Use graphical analysis to identify the socially optimal price and the fair-return price for the regulated monopoly.
- ☐ Explain the dilemma of regulation based on a graphical analysis of a regulated monopoly.
- ☐ Discuss the market forces that made De Beers change its monopoly behavior and end its attempts to control the diamond market (Last Word).

#### ■ CHAPTER OUTLINE

1. **Pure monopoly** is a market structure in which a single firm sells a product for which there are no close substitutes. These characteristics make the monopoly firm a **price maker** rather than a price taker, as was the case for the purely competitive firm. Entry into the industry is blocked, and there can be nonprice competition through advertising to influence the demand for the product.

a. Examples of monopolies typically include regulated public utilities such as firms providing electricity, natural gas, local telephone service, and cable television, but they can also be unregulated, such as the De Beers diamond syndicate.

b. The study of monopoly is useful for understanding the economic effects of other market structures—oligopoly and monopolistic competition—where there is some degree of monopoly power.

2. Pure monopoly can exist in the long run only if potential competitors find there are **barriers** that prevent their entry into the industry. There are four major **barriers to entry** that can prevent or severely restrict entry into an industry.

a. **Economies of scale** can reduce production costs in the long run so that one producer can supply a range of output at a minimum total cost. If other producers try to enter the industry, extensive financing would be required and they may not be able to produce output at a lower cost than the monopolist. The conditions for a **natural monopoly** arise in the extreme case in which the market demand curve cuts the long-run ATC curve where they are still declining. One firm can supply the market demand at a minimum cost.

b. Government creates legal restrictions through issuing patents and licenses. **Patents** give the inventor the exclusive right to use or allow others to use the invention. **Licenses** give a firm the exclusive right to provide a good or service.

c. The ownership or control of essential resources can effectively block entry into an industry.

d. Pricing and other strategic practices, such as price cuts, advertising campaigns, and producing excess capacity, can deter entry into an industry by making entry very costly for a firm.

3. The **demand curve** of the pure monopolist is downsloping because the monopolist is the industry. By contrast, the purely competitive firm has a horizontal (perfectly price elastic) demand curve because it is only one of many small firms in an industry. There are several implications of the downsloping shape of the monopolist's demand curve.

a. The monopolist can increase sales only by lowering product price; thus price will exceed marginal revenue ( $P > MR$ ) for every unit of output but the first.

b. The monopolist will have a pricing policy, and is a **price maker**; the purely competitive firm has no price policy and is a price taker.

c. The monopolist will avoid setting price in the inelastic segment of its demand curve because total revenue will be decreasing and marginal revenue will be negative; price will be set in the *elastic* portion of the demand curve.

4. The **output and price determination** of the profit-maximizing pure monopolist entails several considerations.

a. Monopoly power in the sale of a product does not necessarily affect the prices that the monopolist pays for resources or the costs of production; an assumption is made in this chapter that the monopolist hires resources in a competitive market and uses the same technology as competitive firms.

b. The monopolist produces that output at which marginal cost and marginal revenue are equal ( $MR = MC$ ) and charges a price at which this profit-maximizing output can be sold.

c. The monopolist has **no supply curve** because there is no unique relationship between price and quantity supplied; price and quantity supplied will change when demand and marginal revenue change. By contrast, a purely competitive firm has a supply curve that is the portion of the marginal cost curve above average variable cost, and there is a unique relationship between price and quantity supplied.

d. Two popular misconceptions about monopolists are that they charge as high a price as possible and that they seek maximum profit per unit of output.

e. The monopolist is **not guaranteed a profit** and can experience losses because of weak demand for a product or high costs of production.

5. Pure monopoly has significant **economic effects** on the economy when compared to outcomes that would be produced in a purely competitive market.

a. The pure monopolist charges a *higher price* and *produces less output* than would be produced by a purely competitive industry. Pure monopoly is **not productively efficient** because price is greater than the minimum of average cost. It is **not allocatively efficient** because price is greater than marginal cost.

b. Monopoly contributes to income inequality in the economy by transferring income from consumers to stockholders who own the monopoly.

c. A pure monopolist in an industry may produce output at a lower or higher average cost than would be the case for a purely competitive industry producing the same product. The costs of production may differ between the two industries for four reasons.

(1) **Economies of scale** in the production of the product allow the pure monopolist to produce it at a lower long-run average cost than a large number of small pure competitors. In the extreme, a firm may be a **natural monopoly** that can supply the market demand at the lowest average cost. There can also be other factors such as *simultaneous consumption* (a product's ability to satisfy a large number of consumers at the same time) and *network effects* (increases in the value of the product for users as the number of users increase) that create extensive economies of scale for firms, especially those firms involved in information technology.

(2) If a pure monopolist is more susceptible to **X-inefficiency** (having an output level that is higher than the lowest possible cost of producing it) than firms in a purely competitive industry, then long-run average costs at every level of output for the monopolist are higher than those purely competitive firms.

(3) **Rent-seeking** expenditures in the form of legal fees, lobbying, and public-relations expenses to obtain or maintain a position as a monopoly add nothing to output, but do increase monopoly costs.

(4) Monopoly is not likely to contribute to technological advance because there is little incentive for the monopolist to produce a more advanced product. The threat of potential competition, however, may stimulate research and more technological advance, but the purpose of this effort is often to restrict or block entry into the industry.

d. Monopoly causes problems for an economy because of higher prices and restricted output. Monopoly, however, is relatively rare. Technological advance and the development of substitute products can also undermine a monopoly. The policy options for dealing with the economic inefficiency of monopoly include the use

of antitrust laws and the breakup of firms, the regulation of price, output, and profits of the monopolist, and simply ignoring the monopoly because its position cannot be sustained.

6. To increase profits a pure monopolist may engage in **price discrimination** by charging different prices to different buyers of the same product (when the price differences do not represent differences in the costs of producing the product).

a. To discriminate, the seller must have some monopoly power, be capable of separating buyers into groups with different price elasticities of demand, and be able to prevent the resale of the product from one group to another group.

b. Price discrimination is common in the U.S. economy. Airlines charge different fares to different passengers for the same flight. Movie theaters vary prices for the same product based on time of day or age. Discount coupons allow firms to charge different prices to different customers for the purchase of the same product.

c. Graphical analysis can be used to show price discrimination to different groups of buyers. The monopolist maximizes its total profit by dividing the market in the segmented groups based on the differences in elasticity of demand. It then produces and sells that output in each market where  $MR = MC$ . It charges a higher price to customers with a less elastic demand and a lower price to customers with a more elastic demand.

7. Monopolies are often **regulated** by government to reduce the misallocation of resources and control prices.

a. A price ceiling determined by the intersection of the marginal cost and demand schedules is the **socially optimal price** and improves the allocation of resources.

b. This ceiling may force the firm to produce at a loss, and therefore government may set the ceiling at a level determined by the intersection of the average cost and demand schedules to allow the monopolist a **fair-return price**.

c. The dilemma of regulation is that the socially optimum price may cause losses for the monopolist, and a fair-return price may result in a less efficient allocation of resources. Also, fair-return price regulation can be complex to conduct in the real world.

8. (Last Word). The price and output decisions of the original De Beers firm fit the monopoly model. It controlled a large supply of diamonds and was able to sell a limited quantity to yield price that was in excess of production costs, and thus obtain monopoly profits. Several factors undercut the monopoly power of De Beers. New discoveries increased supply and previous agreements to sell diamonds exclusively to De Beers were terminated. The firm could no longer control price by manipulating supply and placed more emphasis on increasing demand to maintain price.

## ■ HINTS AND TIPS

1. Make sure you understand **how pure monopoly differs from pure competition**. Here are key distinctions: (a) The monopolist's demand curve is downsloping, not horizontal as in pure competition; (b) the monopolist's marginal revenue is less than price (or average revenue) for each level of output except the first, whereas in pure competition marginal revenue equals price; (c) the monopoly firm is a price maker, not a price taker as in pure competition; (d) *the firm is the industry* in monopoly, but not in pure competition; (e) there is the potential for long-run economic profits in pure monopoly, but purely competitive firms will only break even in the long run; and (f) there is no supply curve for a pure monopoly, but there is one for the purely competitive firm.

2. A key similarity between a profit-maximizing pure monopolist and a purely competitive firm is that both types of firms will produce up to that output level at which marginal revenue equals marginal cost ( $MR = MC$ ).

3. Figure 10.3 helps explain why the profit-maximizing monopolist will always want to select some price and quantity combination in the **elastic** and not in the **inelastic** portion of the demand curve. In the inelastic portion, total revenue declines and marginal revenue is negative.

4. Drawing the marginal revenue curve for a monopolist with a linear demand curve is easy if you remember that the marginal revenue curve will always be a straight line that intersects the quantity axis at half of the level of output as the demand curve. (See Figure 10.3.)

5. Spend extra time studying Figure 10.8 and reading the related discussion. It will help you see how **price discrimination** results in more profits, a greater output, and a higher price for some consumers and lower prices for other consumers.

## ■ IMPORTANT TERMS

pure monopoly	rent-seeking behavior
barriers to entry	price discrimination
simultaneous consumption	socially optimal price
network effects	fair-return price
X-inefficiency	

## SELF-TEST

## ■ FILL-IN QUESTIONS

1. Pure monopoly is an industry in which a single firm is the sole producer of a product for which there are no close (substitutes, complements) \_\_\_\_\_ and into which entry in the long run is effectively (open, blocked) \_\_\_\_\_.

2. The closest example of pure monopoly would be government-regulated (nonprofit organizations, public

utilities) \_\_\_\_\_ that provide water, electricity, or natural gas. There are also "near monopolies," such as private businesses that might account for (40, 80) \_\_\_\_\_ % of a particular market, or businesses in a geographic region that are the (multiple, sole) \_\_\_\_\_ suppliers of a good or service.

3. If there are substantial economies of scale in the production of a product, a small-scale firm will find it difficult to enter into and survive in an industry because its average costs will be (greater, less) \_\_\_\_\_ than those of established firms, and a firm will find it (easy, difficult) \_\_\_\_\_ to start out on a large scale because it will be nearly impossible to acquire the needed financing.

4. Legal barriers to entry by government include granting an inventor the exclusive right to produce a product for 20 years, or a (license, patent) \_\_\_\_\_, and limiting entry into an industry or occupation through its issuing of a \_\_\_\_\_.

5. Other barriers to entry include the ownership of essential (markets, resources) \_\_\_\_\_ and strategic changes in product (price, regulation) \_\_\_\_\_.

6. The demand schedule confronting the pure monopolist is (perfectly elastic, downsloping) \_\_\_\_\_. This means that marginal revenue is (greater, less) \_\_\_\_\_ than average revenue (or price) and that both marginal revenue and average revenue (increase, decrease) \_\_\_\_\_ as output increases.

7. When demand is price elastic, a decrease in price will (increase, decrease) \_\_\_\_\_ total revenue, but when demand is price inelastic, a decrease in price will \_\_\_\_\_ total revenue. The demand curve for the purely competitive firm is (horizontal, downsloping) \_\_\_\_\_, but it is \_\_\_\_\_ for the monopolist. The profit-maximizing monopolist will want to set price in the price (elastic, inelastic) \_\_\_\_\_ portion of its demand curve.

8. The supply curve for a purely competitive firm is the portion of the (average variable cost, marginal cost) \_\_\_\_\_ curve that lies above the \_\_\_\_\_ curve. The supply curve for the monopolist (is the same, does not exist) \_\_\_\_\_.

9. When the economic profit of a monopolist is at a maximum, (marginal, average) \_\_\_\_\_ revenue equals \_\_\_\_\_ cost and price is (greater, less) \_\_\_\_\_ than marginal cost.

10. Two common misconceptions about pure monopoly are that it charges the (lowest, highest) \_\_\_\_\_ price possible and seeks the maximum (normal, per-unit) \_\_\_\_\_ profit.

11. The pure monopolist (is, is not) \_\_\_\_\_ guaranteed an economic profit; in fact, the pure monopolist can experience economic losses in the (short run, long run) \_\_\_\_\_ because of (strong, weak) \_\_\_\_\_ demand for the monopoly product.

12. The monopolist will typically charge a (lower, higher) \_\_\_\_\_ price and produce (less, more) \_\_\_\_\_ output and is (less, more) \_\_\_\_\_ efficient than if the product was produced in a purely competitive industry.

a. The monopolist is inefficient *productively* because the average (variable, total) \_\_\_\_\_ cost of producing a product is not at a (maximum, minimum) \_\_\_\_\_.

b. It is inefficient *allocatively* because (marginal revenue, price) \_\_\_\_\_ is not equal to (marginal, total) \_\_\_\_\_ cost.

c. Monopolies seem to result in a greater inequality in the distribution of income because the owners of monopolies are largely in the (upper, lower) \_\_\_\_\_ income groups.

13. Resources can be said to be more efficiently allocated by pure competition than by pure monopoly only if the purely competitive firms and the monopoly have the same (costs, revenues) \_\_\_\_\_, and they will not be the same if the monopolist

a. by virtue of being a large firm enjoys (economies, diseconomies) \_\_\_\_\_ of scale not available to a pure competitor;

b. is more susceptible to X-(efficiency, inefficiency) \_\_\_\_\_ than pure competitors;

c. may need to make (liability, rent-seeking) \_\_\_\_\_ expenditures to obtain or maintain monopoly privileges granted by government; and,

d. reduces costs through adopting (higher prices, new technology) \_\_\_\_\_.

14. The incidence of pure monopoly is relatively (rare, common) \_\_\_\_\_ because eventually new developments in technology (strengthen, weaken) \_\_\_\_\_ monopoly power or (substitute, complementary) \_\_\_\_\_ products are developed.

15. Three general policy options to reduce the economic (losses, inefficiency) \_\_\_\_\_ of a monopoly are to file charges against it through (liability, antitrust)

\_\_\_\_\_ laws, have government regulate it if it is a (conglomerate, natural monopoly) \_\_\_\_\_, or ignore it if it is unsustainable.

16. Price discrimination occurs whenever a product is sold at different (markets, prices) \_\_\_\_\_, and these differences are not equal to the differences in the (revenue from, cost of) \_\_\_\_\_ producing the product.

17. Price discrimination is possible when the following three conditions exist:

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

18. One economic consequence of a monopolist's use of price discrimination is (an increase, a decrease) \_\_\_\_\_ in profits.

19. If the monopolist were regulated and a socially optimal price for the product were sought, the price would be set equal to (marginal, average total) \_\_\_\_\_ cost. Such a legal price would achieve (productive, allocative) \_\_\_\_\_ efficiency but might result in losses for the monopolist.

20. If a regulated monopolist is allowed to earn a fair return, the ceiling price for the product would be set equal to (marginal, average total) \_\_\_\_\_ cost. Such a legal price falls short of (allocative, productive) \_\_\_\_\_ efficiency.

## ■ TRUE-FALSE QUESTIONS

Circle T if the statement is true, F if it is false.

1. The pure monopolist produces a product for which there are no close substitutes. T F

2. The weaker the barriers to entry into an industry, the more competition there will be in the industry, other things equal. T F

3. In pure monopoly, there are strong barriers to entry. T F

4. A monopolist may create an entry barrier by price cutting or substantially increasing the advertising of its product. T F

5. The monopolist can increase the sales of its product if it charges a lower price. T F

6. As a monopolist increases its output, it finds that its total revenue at first decreases, and that after some output level is reached, its total revenue begins to increase. T F

7. A purely competitive firm is a price taker but a monopolist is a price maker. T F

8. A monopolist will avoid setting a price in the *inelastic* segment of the demand curve and prefer to set the price in the *elastic* segment. T F

9. The monopolist determines the profit-maximizing output by producing that output at which marginal cost and marginal revenue are equal and sets the product price equal to marginal cost and marginal revenue at that output. T F

10. The supply curve for a monopolist is the upsloping portion of the marginal cost curve that lies above the average variable cost. T F

11. A monopolist will charge the highest price it can get. T F

12. A monopolist seeks maximum total profits, not maximum unit profits. T F

13. Pure monopoly guarantees economic profits. T F

14. Resources are misallocated by monopoly because price is not equal to marginal cost. T F

15. One of the economic effects of monopoly is less income inequality. T F

16. When there are substantial economies of scale in the production of a product, the monopolist may charge a price that is lower than the price that would prevail if the product were produced by a purely competitive industry. T F

17. The purely competitive firm is more likely to be affected by X-inefficiency than a monopolist. T F

18. Rent-seeking expenditures that monopolists make to obtain or maintain monopoly privilege have no effect on the firm's costs. T F

19. The general view of economists is that a pure monopoly is efficient because it has strong incentives to be technologically progressive. T F

20. One general policy option for a monopoly that creates substantial economic inefficiency and is long lasting is to directly regulate its prices and operation. T F

21. Price discrimination occurs when a given product is sold at more than one price and these price differences are not justified by cost differences. T F

22. A discriminating monopolist who can segment its market based on elasticity of demand will charge a higher price to the customers with a less elastic demand and a lower price to customers with a more elastic demand. T F

23. The regulated utility is likely to make an economic profit when price is set to achieve the most efficient allocation of resources ( $P = MC$ ). T F

24. A fair-return price for a regulated utility would have price set to equal average total cost. T F

25. The dilemma of monopoly regulation is that the production by a monopolist of an output that causes no

misallocation of resources may force the monopolist to suffer an economic loss. T F

### ■ MULTIPLE-CHOICE QUESTIONS

*Circle the letter that corresponds to the best answer.*

1. Which would be defining characteristics of pure monopoly?

- (a) The firm does no advertising and it sells a standardized product.
- (b) No close substitutes for the product exist and there is one seller.
- (c) The firm can easily enter into or exit from the industry and profits are guaranteed.
- (d) The firm holds a patent and is technologically progressive.

2. A barrier to entry that significantly contributes to the establishment of a monopoly would be

- (a) economies of scale
- (b) price-taking behavior
- (c) technological progress
- (d) X-inefficiency

3. The demand curve for the pure monopolist is

- (a) perfectly price elastic
- (b) perfectly price inelastic
- (c) downsloping
- (d) upsloping

4. Which is true with respect to the demand data confronting a monopolist?

- (a) Marginal revenue is greater than average revenue.
- (b) Marginal revenue decreases as average revenue decreases.
- (c) Demand is perfectly price elastic.
- (d) Average revenue (or price) increases as the output of the firm increases.

5. When the monopolist is maximizing total profits or minimizing losses,

- (a) total revenue is greater than total cost
- (b) average revenue is greater than average total cost
- (c) average revenue is greater than marginal cost
- (d) average total cost is less than marginal cost

6. At which combination of price and marginal revenue is the price elasticity of demand less than 1?

- (a) Price equals \$102, marginal revenue equals \$42.
- (b) Price equals \$92, marginal revenue equals \$22.
- (c) Price equals \$82, marginal revenue equals \$2.
- (d) Price equals \$72, marginal revenue equals -\$18.

7. The region of demand in which the monopolist will choose a price-output combination will be the

- (a) elastic one because total revenue will increase as price declines and output increases
- (b) inelastic one because total revenue will increase as price declines and output increases
- (c) elastic one because total revenue will decrease as price declines and output increases
- (d) inelastic one because total revenue will decrease as price declines and output increases

8. At present output a monopolist determines that its marginal cost is \$18 and its marginal revenue is \$21. The monopolist will maximize profits or minimize losses by
- increasing price while keeping output constant
  - decreasing price and increasing output
  - decreasing both price and output
  - increasing both price and output

Answer Questions 9, 10, and 11 based on the demand and cost data for a pure monopolist given in the following table.

Quantity demanded	Price	Total cost
0	\$700	\$ 300
1	650	400
2	600	450
3	550	510
4	500	590
5	450	700
6	400	840
7	350	1020
8	300	1250
9	250	1540
10	200	1900

9. The profit-maximizing output and price for this monopolist would be

- 5 units and \$450
- 6 units and \$400
- 7 units and \$350
- 8 units and \$300

10. The profit-maximizing price for this monopolist would be

- \$300 price
- \$350 price
- \$400 price
- \$450 price

11. At the profit-maximizing price and output, the amount of profit for the monopolist would be

- \$1410
- \$1430
- \$1550
- \$1560

12. The supply curve for a pure monopolist

- is the portion of the marginal cost curve that lies above the average variable cost curve
- is perfectly price elastic at the market price
- is upsloping
- does not exist

13. The analysis of monopoly indicates that the monopolist

- will charge the highest price it can get
- will seek to maximize total profits
- is guaranteed an economic profit
- is only interested in normal profit

14. When compared with the purely competitive industry with identical costs of production, a monopolist will charge a

- higher price and produce more output
- lower price and produce more output

- lower price and produce less output
- higher price and produce less output

15. At an equilibrium level of output, a monopolist is *not* productively efficient because

- the average total cost of producing the product is not at a minimum
- the marginal cost of producing the last unit is equal to its price
- it is earning a profit
- average revenue is less than the cost of producing an extra unit of output

16. A product's ability to satisfy a large number of consumers at the same time is called

- network effects
- X-inefficiency
- economies of scale
- simultaneous consumption

17. Which will tend to increase the inefficiencies of the monopoly producer?

- price-taking behavior
- rent-seeking behavior
- economies of scale
- technological progress

18. Which is one of the conditions that must be met before a seller finds that price discrimination is workable?

- The demand for the product is perfectly elastic.
- The seller must be able to segment the market.
- The buyer must be able to resell the product.
- The product must be a service.

19. A monopolist can segment two groups of buyers of its product based on elasticity of demand. Assume that ATC remains constant. The monopolist will maximize profit by charging

- the highest price to all customers
- the lowest price to all customers
- a higher price to customers with an elastic demand and a lower price to customers with an inelastic demand
- a lower price to customers with an elastic demand and a higher price to customers with an inelastic demand

Answer Questions 20, 21, and 22 based on the demand and cost data for a pure monopolist given in the following table.

Output	Price	Total cost
0	\$1000	\$ 500
1	600	520
2	500	580
3	400	700
4	300	1000
5	200	1500

20. The profit-maximizing output and price for this monopolist would be

- 1 and \$100
- 2 and \$200

- (c) 3 and \$400  
(d) 4 and \$300

21. At the profit-maximizing price and output, the amount of profit for the monopolist would be

- (a) \$200  
(b) \$340  
(c) \$420  
(d) \$500

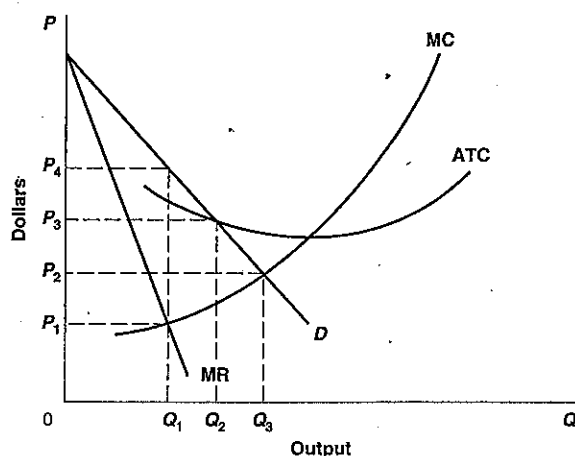
22. If the monopolist were forced to produce the socially optimal output by the imposition of a ceiling price, the ceiling price would have to be

- (a) \$200  
(b) \$300  
(c) \$400  
(d) \$500

23. A monopolist who is limited by the imposition of a ceiling price to a fair return sells the product at a price equal to

- (a) average total cost  
(b) average variable cost  
(c) marginal cost  
(d) average fixed cost

Questions 24 and 25 are based on the following graph.



24. The price and output combination for the unregulated profit-maximizing monopoly compared with the socially optimal price and output combination for the regulated monopoly would be, respectively,

- (a)  $P_4$  and  $Q_1$  versus  $P_3$  and  $Q_2$   
(b)  $P_4$  and  $Q_1$  versus  $P_2$  and  $Q_3$   
(c)  $P_3$  and  $Q_2$  versus  $P_4$  and  $Q_1$   
(d)  $P_2$  and  $Q_3$  versus  $P_3$  and  $Q_2$

25. The dilemma of regulation that compares the fair-return price and output with the socially optimal price and output would be, respectively,

- (a)  $P_4$  and  $Q_1$  versus  $P_3$  and  $Q_2$   
(b)  $P_4$  and  $Q_1$  versus  $P_2$  and  $Q_3$   
(c)  $P_3$  and  $Q_2$  versus  $P_4$  and  $Q_1$   
(d)  $P_2$  and  $Q_3$  versus  $P_3$  and  $Q_2$

### PROBLEMS

1. The demand schedule for the product produced by a monopolist is given in the following table.

Quantity demanded	Price	Total revenue	Marginal revenue	Price elasticity
0	\$700	\$		
1	650		\$	
2	600			
3	550			
4	500			
5	450			
6	400			
7	350			
8	300			
9	250			
10	200			
11	150			
12	100			
13	50			
14	0			

a. Complete the table by computing total revenue, marginal revenue, and the price elasticity of demand (use midpoints formula).

b. The relationships in the table indicate that

(1) total revenue rises from \$0 to a maximum of \$\_\_\_\_\_ as price falls from \$700 to \$\_\_\_\_\_, and as price falls to \$0, total revenue falls from its maximum to \$\_\_\_\_\_;

(2) the relationship between price and total revenue suggests that demand is price (elastic, inelastic)

\_\_\_\_\_ when quantity demanded is between 0

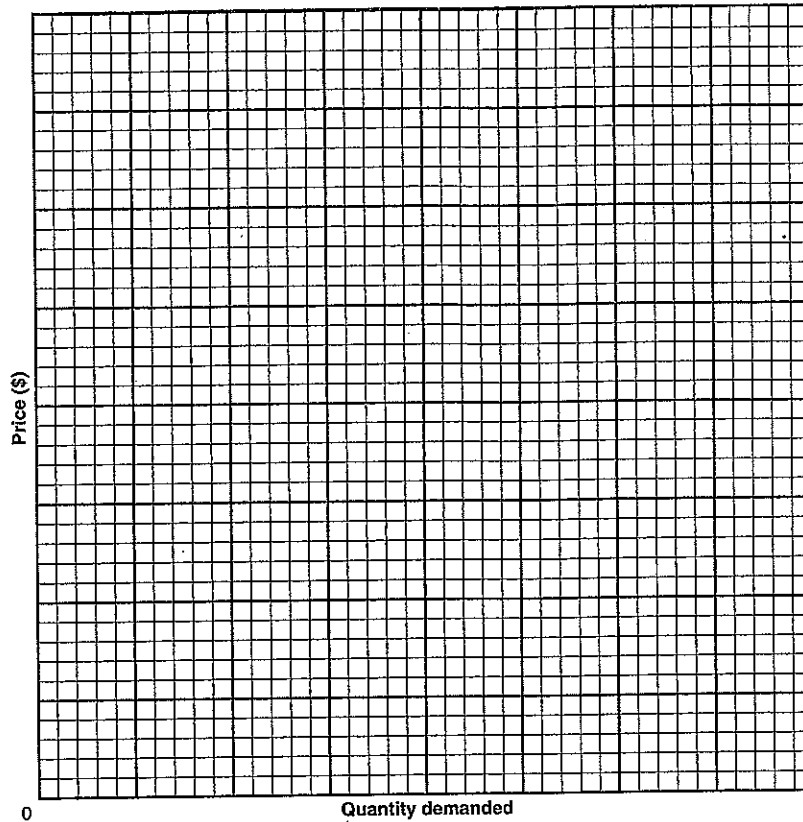
and 7 units of output, but that demand is price (elastic,

inelastic) \_\_\_\_\_ when quantity demanded is between 8 units and 14 units;

(3) when demand is price elastic and total revenue rises from \$0 to a maximum, marginal revenue is (negative, positive) \_\_\_\_\_, but when demand is price inelastic and total revenue falls from its maximum, marginal revenue is \_\_\_\_\_.

c. Use the data in the previous table and the graph on the next page to plot and graph the demand curve and the marginal revenue curve for the monopolist. Indicate the portion of the demand curve that is price elastic and the portion that is price inelastic.





2. The following table shows demand and cost data for a pure monopolist.

Quantity demanded	Price	Total revenue	Marginal revenue	Total cost	Marginal cost
0	\$17	\$ _____		\$10	
1	16	_____	\$ _____	18	\$ _____
2	15	_____	_____	23	_____
3	14	_____	_____	25	_____
4	13	_____	_____	27	_____
5	12	_____	_____	28	_____
6	11	_____	_____	32	_____
7	10	_____	_____	40	_____
8	9	_____	_____	50	_____
9	8	_____	_____	64	_____
10	7	_____	_____	80	_____

a. Complete the table by filling in the columns for total revenue, marginal revenue, and marginal cost.

b. Answer the next three questions using the data you calculated in the table.

(1) What output will the monopolist produce?

(2) What price will the monopolist charge?

(3) What total profit will the monopolist receive at the profit-maximizing level of output? \_\_\_\_\_

3. In the following table are cost and demand data for a pure monopolist.

Quantity demanded	Price	Marginal revenue	Average cost	Marginal cost
0	\$17.50			
1	16.00	\$16.00	\$24.00	\$24.00
2	14.50	13.00	15.00	6.00
3	13.00	10.00	11.67	5.00
4	11.50	7.00	10.50	7.00
5	10.00	4.00	10.00	8.00
6	8.50	1.00	9.75	8.50
7	7.00	-2.00	9.64	9.00
8	5.50	-5.00	9.34	9.25
9	4.00	-8.00	9.36	9.50

a. An unregulated monopolist would produce \_\_\_\_\_ units of this product, sell it at a price of \$ \_\_\_\_\_, and receive a total profit of \$ \_\_\_\_\_.

b. If this monopolist were regulated and the maximum price it could charge were set equal to marginal cost, it would produce \_\_\_\_\_ units of a product, sell it at a price of \$ \_\_\_\_\_, and receive a total profit of \$ \_\_\_\_\_. Such regulation would either \_\_\_\_\_ the firm or require that the regulating government \_\_\_\_\_ the firm.

c. If the monopolist were regulated and allowed to charge a fair-return price, it would produce \_\_\_\_\_ units of product, charge a price of \$ \_\_\_\_\_, and receive a profit of \$ \_\_\_\_\_.

- d. From which situation—*a*, *b*, or *d*—does the most efficient allocation of resources result? \_\_\_\_\_  
From which situation does the least efficient allocation result? \_\_\_\_\_ In practice, government would probably select situation \_\_\_\_\_.
4. Identify whether the following long-run conditions apply to a firm under pure monopoly (*M*), pure competition (*C*), or both. Put the appropriate letter(s) (*M* or *C*) next to the condition.
- There is the potential for long-run profits because price is greater than or equal to average total cost. \_\_\_\_\_
  - The firm's demand curve is perfectly elastic. \_\_\_\_\_
  - The firm maximizes profits at the output level where  $MC = MR$ . \_\_\_\_\_
  - The firm exhibits productive efficiency because price is equal to the minimum average total cost. \_\_\_\_\_
  - Price is greater than marginal revenue for each output level except the first. \_\_\_\_\_
  - There is an optimal allocation of resources because price is equal to marginal cost. \_\_\_\_\_

#### ■ SHORT ANSWER AND ESSAY QUESTIONS

- What is pure monopoly? Define its characteristics.
- Give examples of monopoly. How might a professional sports team be considered a monopoly when there are other such teams in the nation?
- Why are the economies of scale a barrier to entry?
- Why are most natural monopolies also public utilities? What does government hope to achieve by granting exclusive franchises to and regulating such natural monopolies?
- How do patents and licenses create barriers to entry? Cite examples.
- How can the monopolist use changes in price and other strategic actions to maintain a monopoly position?
- Compare the pure monopolist and the individual pure competitor with respect to: (a) the demand schedule; (b) the marginal revenue schedule; (c) the relationship between marginal revenue and average revenue; (d) price policy, and (e) the ability to administer (or set) price.
- Explain why marginal revenue is always less than average revenue (price) when demand is less than perfectly elastic.
- Suppose a pure monopolist discovered it was producing and selling an output at which the demand for its product was inelastic. Explain why a decrease in its output would increase its economic profits.
- How does the profit-maximizing monopolist determine what output to produce? What price will it charge?
- Why is there no supply curve for a monopoly?
- Why does the monopolist not charge the highest possible price for its product?
- Why does the monopolist not set the price for its product in such a way that average profit is a maximum?
- Why are some monopolies unprofitable? Explain what will happen to the firm in the short run and the long run in this situation.
- In what sense is resource allocation and production more efficient under conditions of pure competition than under monopoly conditions?
- How do monopolies allegedly affect the distribution of income in the economy and why do monopolies seemingly have this effect on income distribution in the U.S. economy?
- What are some reasons why costs might differ between a monopoly and purely competitive firms operating in the same industry? Give at least four possible reasons.
- Explain how economies of scale offset some of the economic inefficiencies of a monopoly. Evaluate the importance of this factor in reducing a monopolist's cost.
- What is X-inefficiency? How does it affect the cost of production for the monopolist?
- A monopolist will often engage in rent-seeking behavior. Explain what this means and how it changes a monopolist's cost.
- Evaluate this statement from an economic perspective: "A pure monopoly has great incentive to discover and use new technology."
- What is meant by price discrimination? Define it. What conditions must be met before it is workable?
- Explain how a monopolist who can segment its market based on elasticity determines the price to charge for each unit of the product sold (or to charge each group of buyers).
- How does price discrimination affect the profits and the output of the monopolist? How does it affect consumers?
- Explain what public-utility regulatory agencies attempt to do to eliminate the misallocation of resources that results from monopoly. Describe the dilemma of regulation for these agencies and explain why a fair-return policy only reduces but does not eliminate misallocation.

---

### ANSWERS

---

#### Chapter 10 Pure Monopoly

##### FILL-IN QUESTIONS

- substitutes, blocked
- public utilities, 80, sole
- greater, difficult
- patent, license
- resources, price

6. downsloping, less, decrease
7. increase, decrease, horizontal, downsloping, elastic
8. marginal cost, average variable cost, does not exist
9. marginal, marginal, greater
10. highest, per-unit
11. is not, short run, weak
12. higher, less, less; a. total, minimum; b. price, marginal; c. upper
13. costs; a. economies; b. inefficiency; c. rent-seeking; d. new technology
14. rare, weaken, substitute
15. inefficiency, antitrust, natural monopoly
16. prices, cost of
17. a. the seller has some monopoly power; b. the seller is able to separate buyers into groups that have different elasticities of demand for the product; c. the original buyers cannot resell the product
18. an increase
19. marginal, allocative
20. average total, allocative

#### TRUE-FALSE QUESTIONS

- |                   |                    |                     |
|-------------------|--------------------|---------------------|
| 1. T, p.202       | 10. F, pp. 208-209 | 19. F, p. 213       |
| 2. T, p. 202      | 11. F, p. 209      | 20. T, pp. 213-214  |
| 3. T, p. 202      | 12. T, p. 209      | 21. T, p. 214       |
| 4. T, pp. 203-204 | 13. F, pp. 209-210 | 22. T, pp. 214-215  |
| 5. T, pp. 204-205 | 14. T, pp. 210-211 | 23. F, pp. 216-217  |
| 6. F, pp. 205-206 | 15. F, p. 211      | 24. T, pp. 217, 219 |
| 7. T, pp. 206-207 | 16. T, pp. 211-212 | 25. T, p. 219       |
| 8. T, p. 207      | 17. F, pp. 212-213 |                     |
| 9. F, pp. 207-208 | 18. F, p. 213      |                     |

#### MULTIPLE-CHOICE QUESTIONS

- |                   |                    |                     |
|-------------------|--------------------|---------------------|
| 1. b, p. 202      | 10. c, pp. 207-208 | 19. d, pp. 215-216  |
| 2. a, pp. 202-203 | 11. d, pp. 207-208 | 20. c, pp. 210-211  |
| 3. c, pp. 204-205 | 12. d, pp. 208-209 | 21. d, pp. 210-211  |
| 4. b, pp. 205-206 | 13. b, p. 209      | 22. b, p. 217       |
| 5. c, pp. 205-206 | 14. d, pp. 210-211 | 23. a, pp. 217, 219 |
| 6. d, pp. 205-206 | 15. a, pp. 210-211 | 24. b, pp. 209-210, |
| 7. a, p. 207      | 16. d, p. 212      | 217                 |
| 8. b, pp. 207-208 | 17. b, p. 213      | 25. d, pp. 217, 219 |
| 9. b, pp. 207-208 | 18. b, pp. 214-215 |                     |

#### PROBLEMS

1. a. Total revenue: \$0, 650, 1200, 1650, 2000, 2250, 2400, 2450, 2400, 2250, 2000, 1650, 1200, 650, 0; Marginal revenue: \$650, 550, 450, 350, 250, 150, 50, -50, -150, -250, -350, -450, -550, -650; Price elasticity: 27, 8.33, 4.60, 3.00, 2.11, 1.55, 1.15, .87, .65, .47, .33, .22, .12, .04; b. (1) \$2450, \$350, 0, (2) elastic, inelastic, (3) positive, negative; c. see Figure 10.3a in the text as an example
2. a. Total revenue: \$0, 16, 30, 42, 52, 60, 66, 70, 72, 72, 70; Marginal revenue: \$16, 14, 12, 10, 8, 6, 4, 2, 0, -2; Marginal cost: \$8, 5, 2, 2, 1, 4, 8, 10, 14, 16; b. (1) 6, (2) \$11, (3) \$34 (TR of \$66 minus TC of \$32)
3. a. 4, 11.50, 4.00; b. 6, 8.50, -7.50, bankrupt, subsidize; c. 5, 10.00, zero; d. b or c, a, d
4. a. M; b. C; c. C, M; d. C; e. M; f. C

#### SHORT ANSWER AND ESSAY QUESTIONS

- |                |                 |                  |
|----------------|-----------------|------------------|
| 1. p. 202      | 10. pp. 207-208 | 19. pp. 212-213  |
| 2. p. 202      | 11. pp. 208-209 | 20. p. 213       |
| 3. p. 203      | 12. p. 209      | 21. p. 213       |
| 4. p. 204      | 13. p. 209      | 22. pp. 214-215  |
| 5. pp. 203-204 | 14. pp. 209-210 | 23. p. 214       |
| 6. p. 204      | 15. pp. 210-211 | 24. pp. 215-216  |
| 7. pp. 204-207 | 16. p. 211      | 25. pp. 216-217, |
| 8. pp. 205-206 | 17. pp. 211-213 | 219              |
| 9. p. 207      | 18. pp. 211-212 |                  |